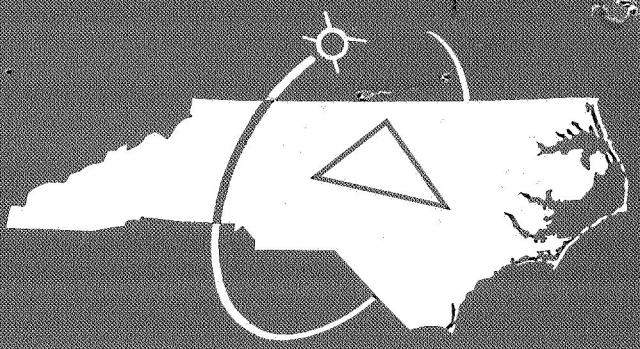

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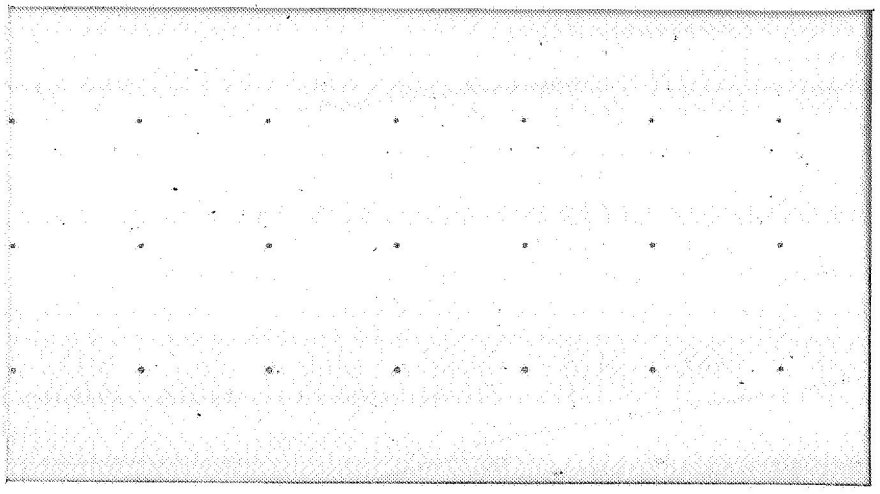

FIFTEENTH QUARTERLY PROGRESS REPORT

ON A

REGIONAL TECHNOLOGY TRANSFER PROGRAM

January 1, 1968 -- March 31, 1968

ABSTRACT

North Carolina Science and Technology Research Center, Research Triangle Park, North Carolina.
FIFTEENTH QUARTERLY PROGRESS REPORT ON A REGIONAL TECHNOLOGY TRANSFER PROGRAM, January 1, 1968--March 31, 1968.
Contract NSR 34-007-003

During the subject quarter, the Center furnished regular service to 37 companies, universities and research organizations. Marketing efforts were extended to Florida, Georgia and Alabama, and a mailing program to companies heavily committed to research and development was expanded.

A total of 212 retrospective searches and computer updates resulted in 2605 evaluated abstracts and 745 complete documents being provided to clients. The inverted file search system developed at STRC was placed in operation, reducing retrospective search costs to approximately one-fifth those for the linear search system. Efforts toward obtaining computerized textile literature progressed. Five cases of technology transfer and two referral cases are reported.

FIFTEENTH QUARTERLY PROGRESS REPORT

ON A

REGIONAL TECHNOLOGY TRANSFER PROGRAM

Submitted April 30, 1968, by

NORTH CAROLINA SCIENCE AND TECHNOLOGY RESEARCH CENTER

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Research Triangle Park, North Carolina 27709

Contract NSR 34-007-003

Period Covered: January 1, 1968 - March 31, 1968

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NORTH CAROLINA SCIENCE AND TECHNOLOGY RESEARCH CENTER

FIFTEENTH QUARTERLY PROGRESS REPORT

I. INTRODUCTION

This is the Fifteenth Quarterly Progress Report to be submitted to the Technology Utilization Division of the National Aeronautics and Space Administration and describes the operation of a regional dissemination center for new technology. The program was started in June, 1964, under contract NASr-235, and is currently supported by NASA under contract NSR 34-007-003. Program support is also provided by the North Carolina Board of Science and Technology and by subscription fees from participating companies.

Objectives of the experimental program are "the enhancement and acceleration of the process of transferring new technology derived through Government sponsorship to uses additionally benefitting the private and public sectors of society."

II. STAFF

On March 31, 1968, the staff of the North Carolina Science and Technology Research Center (STRC) consisted of the director, the assistant director for operations, the assistant director for marketing, a technology utilization manager, three applications engineers, an information specialist, a computer programmer, a technical editor, an information technologist, an accountant, six clerical assistants, and two secretaries.

III. ACTIVITIES

A. STRC Operations

On March 31, 1968, STRC was furnishing regular services to 37 organizations, for a current subscription level of $18,200. The subscription aggregate totalled $34,490. Of the current clients, 27 are paying subscription fees for annual services, and 10 are on a fee-per-service basis.

Companies receiving services under yearly subscriptions totalling $18,200 are listed below.

Aeroglide Corporation

Aerotron, Inc.

American Enka

Athey Products, Inc.

Beaunit Fibers

Burlington Industries, Inc.

Celanese Fibers Company

Columbia Products

Corning Glass Works

Cornell-Dubilier Electric Corporation

Electro Motive Manufacturing Company

Exide Missile & Electronics Division, Electric Storage Battery Company

General Electric Company

Gilbert & Barker Manufacturing

Hilemn Laboratories, Inc.

International Business Machines

Northrop Carolina, Inc.

Peninsular ChemResearch, Inc.

Philip Morris, Inc.

Reynolds Metals Company

A. H. Robins Company, Inc.

Research Triangle Institute Biomedical Applications Team

Sangamo Electric Company

Standard Crankshaft Company, Inc.

Taylor Instrument Company

Thomasville Furniture Company

Troxler Electronics Laboratories

Participating on a fee-per-service basis were the following organizations:

Allied Chemicals Corporation

Auburn University

Clemson University

Chemstrand Research Center

General Boiler Casing Company

North Carolina State University

Research Triangle Institute

Stencel Aero Engineering

University of North Carolina

Virginia Polytechnical Institute

1. Computer Retrieval System

The inverted file search system (IVS) developed at STRC was placed in operation during the past quarter for all retrospective searching. Search output is a listing of accession numbers only, instead of the full citation obtained from the NASA Mod II Linear

Search System (LSS), necessitating additional clerical labor to provide abstracts for search review.

The IVS printout shows which hits were produced by each logical combination of terms, as an aid to refining search strategy. The system is functioning well, with search costs approximately one-fifth of those for the LSS (not including the extra labor required to provide abstracts for review).

Program revisions are being made to further reduce search time. A recent series of 4 searches on the same subject required a total of 58 seconds computer time and was completed in less than two hours elapsed time, including review of search output and modifications to search strategy after each of the first three searches.

2. Information Resources

STRC continued to work closely with North Carolina State University in a program to obtain a textile information file from Massachusetts Institute of Technology, convert it for operation on local third-generation computer systems, and provide new input on a continuing basis.

Usage of the vendor catalog file obtained from Information Retrieval, Inc. (now Sweet's Industrial File, Division of McGraw-Hill) has been less than anticipated. The present activity of this file does not justify the subscription cost to STRC.

3. Marketing Program

In the last Quarterly Report, it was noted that most of the industries in North Carolina, South Carolina and Virginia having the need and potential capability to use the Center's services had

been contacted, and the same can now be reported concerning Alabama and Georgia. A total of about 225 staff and technical people at 105 companies and research organizations were approached during the quarter.

As discussed under III B, Meetings, Trips and Visits, about 170 faculty members and graduate students at 10 leading universities were apprised of the Center's services. A special effort continues in an attempt to stimulate interest at institutions of higher learning, particularly those heavily committed to research.

Selected agencies of Georgia and Florida state governments also were approached during the quarter and encouraged to use the information services of STRC.

Marketing efforts include an expanded mailing program. Letters describing the Center's services and soliciting appointments have been mailed to companies identified as having a research and development capability.

At the close of the last quarter, December 31, 1967, the Center had a total of 31 clients on annual subscriptions and eight on a fee-per-service basis. During the current report period, ending March 31, 1968, five new clients were added, seven resubscribed and seven dropped, for a total of 37 clients--27 on a yearly subscription and ten in the fee-per-service category.

A total of current annual subscriptions as of March 31 was $18,200, with a cumulative total of $34,490 for all services provided by the Center to date.

4. Services to University Faculty

Dr. Richard B. Knight, professor of mechanical engineering at North Carolina State University, requested information which he could use in speaking on the subject of technology utilization at an engineering society meeting at the University of Puerto Rico.

Applications Engineer G. M. Wylie provided Dr. Knight with the latest NASA technology utilization film, a number of selected NASA special publications, several sample searches, and copies of the NASA technology utilization brochure.

B. Meetings, Trips and Visits

Nearly all members of the STRC professional staff made trips on Center business during the quarter.

STRC Director P. J. Chenery visited these three cities:

January 25, the University of Tennessee at Knoxville, where he spoke to about 35 faculty members as the monthly Space Sciences Seminar Series speaker. He was accompanied by Lem M. Kelly, Assistant Director for Marketing.

March 5, Washington, D. C., attended meeting at National Science Foundation to plan the regional conference on science and technology and state governments; and NASA Headquarters to discuss regional dissemination center operations.

March 8-9, Pittsburgh, Pennsylvania, attended meeting of the Action Council of Regional Dissemination Directors (ACORDD).

On February 27, in Greensboro, he and Applications Engineer G. M. Wylie attended a presentation sponsored by the Eastman Kodak Company on microfilm equipment.

Mr. Chenery received these visitors:

March 6, Fred R. Jones of the Florida Development Board and

William M. Neale, Jr., of Vitro Corporation visited the Center to discuss provision of information services to the Florida State Technical Services Program.

March 7, Mr. P. K. Reily, Director of the Office of State Technical Services of the U. S. Department of Commerce.

March 12, Mr. H. Migel, Vice President of Magnaflux Corporation of Chicago, visited to discuss possible products in the medical instrumentation field resulting from NASA work.

March 13, Dr. Henry Schultze and Mr. N. M. Smurthwaite of the South Carolina State Development Board visited STRC to discuss information services to South Carolina under the State Technical Services Program.

In other trips by staff members, John Marston, Director of Communications, attended a workshop, sponsored by the North Carolina Chapter of the American Public Relations Society, in High Point on January 22.

Mr. Kelly spoke to about 125 members of the Dothan, Ga., Rotary Club on January 29.

Accompanied by Technology Utilization Manager J. Graves Vann, Jr., Mr. Kelly explained the Center's services to a total of about 150 faculty members at these campuses: Georgia Institute of Technology, January 9 and February 1; Auburn University, January 10; Mississippi State University, January 11; Duke University and the University of North Carolina, February 9; and North Carolina State University on February 16. At N. C. State University, they were accompanied by Dr. F. O. Smetana, Assistant Director for Operations, and Applications Engineer Arthur W. Lockwood.

Mr. Kelly also visited the University of Florida, where he spoke to about 15 persons, on March 4-5. He was accompanied by Mr. Lockwood to the University of North Carolina on March 12.

On February 12-14, Mr. Wylie and Applications Engineer T. R. Potter visited VPI at Blacksburg, Virginia, and the Bowman Gray School of Medicine in Winston-Salem to explain the Center's services to graduate students.

C. Statistics

This section lists the number of documents disseminated by STRC during the report period. Categories of usefulness have been established by STRC engineers, based on information from client companies and on the engineers' judgement in light of the companies' interests and capabilities.

Figures in this section represent complete documents.

1. Search mailings

a. Categories	Number sent
Pertinent -	668
(This classification is established for documents containing technology having a direct bearing on processes, products and equipment actually being used by the industries to which they are sent. Described are processes, etc., that may be readily adapted with a minimum of additional research and reorganization.)	
Interest -	77
(Documents representing advancement in a given area of operation and relating to products, etc., that fit naturally and logically. Technology may be employed after additional in-house developmental research.)	

Background - 0

(Documents which review state-of-the-art in a general area of interest which might serve to expand the receiving organization. Documents that contain theoretical and developmental research reports. Sent usually only to large companies with greater ability to understand and adapt new technology.)

Total sent 745

b. Total STAR Documents (categorized) - - - - - - - - 425
Total STAR Documents (uncategorized) - - - - - - - 29

c. Total IAA Documents - - - - - - - - - - - - - - - - - 226

d. Total Documents from other sources - - - - - - - - 65

(Open literature, in-house generated bibliographies not categorized.)

2. Industrial applications mailing

a. Number of research reports - - - - - - - - - - - - 680

b. Number of reprints of open literature plus documents prepared in-house - - - - - - - - - - - - 508

c. Number of Tech Briefs and Flash Sheets - - - - - - 43

d. Number of companies sent to - - - - - - - - - - - 60

3. Number of retrospective search requests received from companies - - - - - - - - - - - - - - - - 54

4. Total number of scientific and technical personnel receiving regular service from STRC - - - 1500

Classification of Documents Sent in Search Mailings

1962 STAR

Category	Number Sent
03 - - - - - - - - - - - - - - -	1
10 - - - - - - - - - - - - - - -	1

11	3
15	1
16	1
18	3
21	2
22	2
32	4
Total	18

1963-64 STAR

Category	Number Sent
01	3
06	1
08	1
09	4
10	2
11	4
12	1
13	1
14	2
15	3
16	8
17	4
18	4
19	7
23	2
26	1
27	1
29	1
32	2
33	4
34	1
Total	57

1965-68 STAR

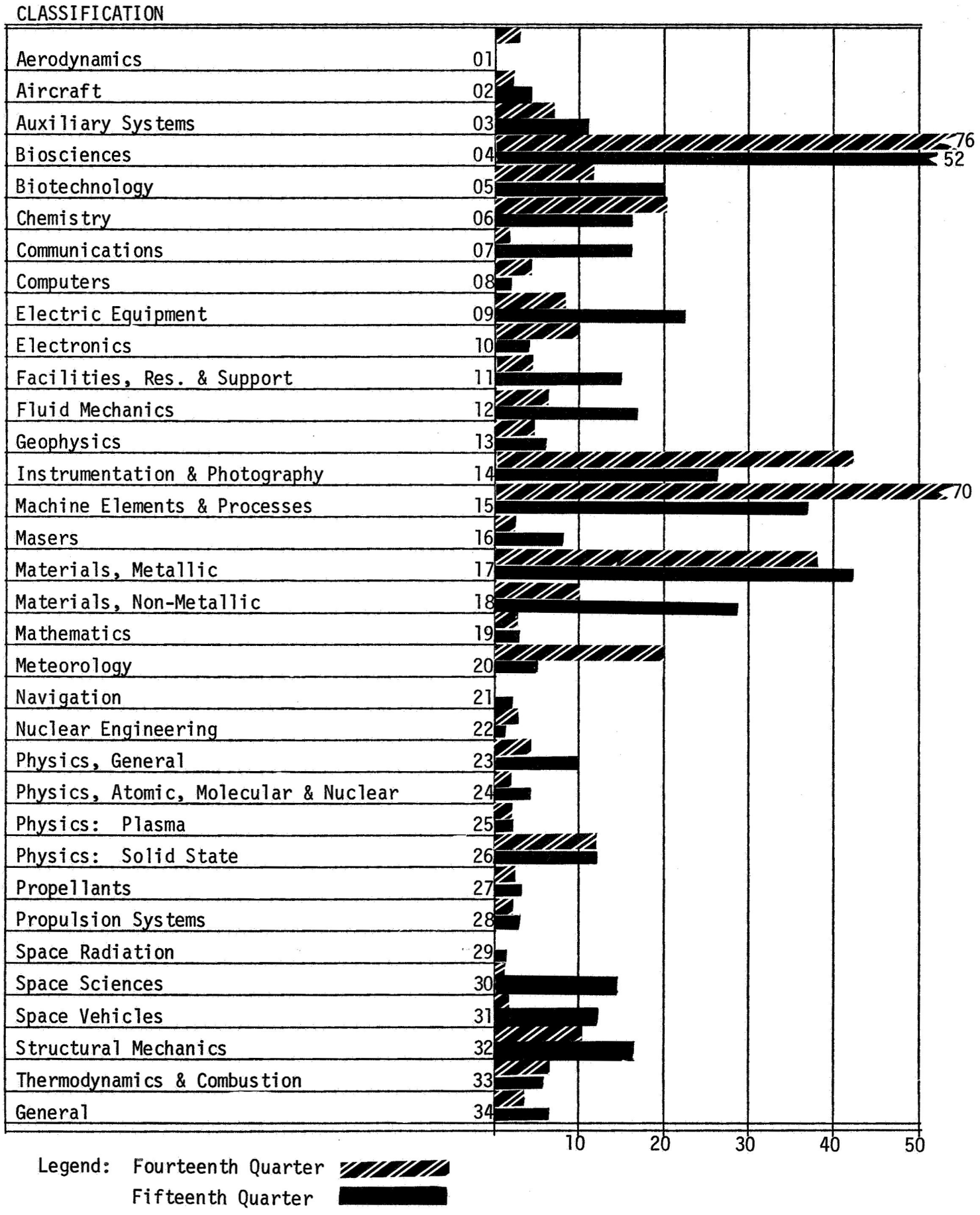
Category	Number Sent
02	3

03	9
04	43
05	18
06	16
07	15
08	2
09	22
11	12
12	9
13	5
14	23
15	33
16	8
17	38
18	19
19	3
20	5
21	2
22	1
23	6
24	4
25	2
26	12
28	2
29	1
30	13
31	9
32	8
33	4
34	3
Total	350

The graph on the following page illustrates the total number of documents, with 1968 Classifications, transferred by STRC in the Fourteenth and Fifteenth Quarters.

TOTAL DOCUMENTS TRANSFERRED FOR

FOURTEENTH AND FIFTEENTH QUARTERS



D. Computer Searches

A total of 53 retrospective searches and 158 computer updates in the quarter produced 13,942 citations. These resulted in 2,605 evaluated abstracts which were mailed to client companies. One hundred and six additional searches were run under a special project. The retrospective searches were as follows:

Surveys and Program Reports
High Velocity Metal Forming
Polar Cap Absorption
Preparation and Properties of Carbon & Graphite
Expandable Structures
Blood Flow Meters
Prosthetic Urinary Sphincter
Autoradiography
Oxygen Tension in Tissue
Transistor Parameter Applications
Nondestructive Crack Measurement
Stress Distribution in Cracked Material
Determination of Fracture Toughness
Crack Formation Technique
Transparent Compacts of Spinel, Alumina, Magnesia, and Beryllia
Engineering Mechanics-Lubrication & Optimization Techniques
Drag Reduction
Mathematical Model of Blood Flow
Liquid Flow Measurement
Sealing Electronic Components
Blood Clotting
Allergies
Hemodynamic Model
Cleaning Material and Techniques
Honeycomb & Foam Sandwich Constructions
Deposition by Sputtering & E-B Evaporation
Optical Masking

Ceramic Coatings on Metal Powders
The Flotation of Aluminum Ores & Recovery of Aluminum
Silicate Coatings
Personal Communications Equipment
Short Half-Life Radiation Medicine
Humidity Measurement
Strip Transmission Line
Wire Contacts
Surfactants Compatible with Stannous Chloride
Deposition of Metals for Bright Surfaces
Mass Spectroscopy
Fluorine-Containing Polymers
Pressure Effects on Metal Properties, Bonding, Forming
Intermetallics
Task Definition
Mitochondria
Lead Poisoning
Hypersonic Boom
Receiving of Aluminum from Clay by Acid Process
Emulsion Polymerization
Personal Communication Systems
Tig Welding
Thermal Insulation
Composite Hollow Structures
High Altitude and Air Density
System Safety Engineering

IV. PLANS FOR NEXT QUARTER

A. Marketing

As discussed under III A 3, Marketing Program, most potential subscribers in Alabama, Georgia, North Carolina, South Carolina and Virginia are now aware of the Center's services. However, new and expanding industries in the five states will be approached as events warrant, and marketing personnel will ascertain if any other

companies can profitably use the NASA information system.

STRC will continue to expand marketing efforts to Southeastern states other than the five already discussed. Follow-up actions will continue in all areas where deemed appropriate.

Generally, during the coming quarter, the marketing program will give first priority to industries, research organizations and institutions of higher learning having a need and capability to use scientific and technical information. Efforts also will be made to influence institutions of higher learning and certain state agencies to use the services of STRC. The mailing program will be increased, to approach an ever-growing number of companies.

B. Computer Retrieval System

Additional improvements to the search program for the new inverted file system (IVS) are planned to reduce search costs. The IVS file now contains accessions for the years 1962-67; we hope to construct a second inverted file of 1968 accessions and to arrange for regular updates of this file. This will permit the transfer of current awareness searching from the 1410 computer to the TUCC facility.

We expect to begin searching for other NASA regional dissemination centers on the IVS after search program improvements are completed.

C. Information Resources

We plan to obtain sample searches of the electronics and plastics files produced by Engineering Index to determine their utility for our clients. If results are favorable, we expect

to subscribe for a one-year trial period.

Efforts will continue to obtain access to chemical literature computer-retrievable files, and to construct and maintain a textile information system.